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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/029,944 | 12/31/2001 | Jung-Im Kim | P67496US0 | 5264 |
| 43569 | 7590 | 09/28/2005 | EXAMINER | |
| MAYER, BROWN, ROWE & MAW LLP 1909 K STREET, N.W. WASHINGTON, DC 20006 | | | TORRES, JOSEPH D | |
| | | ART UNIT | | PAPER NUMBER |
| | | | | 2133 |

DATE MAILED: 09/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/029,944 | KIM ET AL. | |
| | Examiner | Art Unit | |
| | Joseph D. Torres | 2133 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 31 August 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-14 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 31 December 2001 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. In view of the amendment filed 08/31/2005, the examiner withdraws all previous 35 USC § 112 rejections.

Response to Arguments

2. Applicant's arguments with regard to 35 U.S.C. § 101 filed 08/31/2005 have been fully considered but they are not persuasive.

The Applicant contends, "Claims 1-14 were rejected under 35 U.S.C. § 101 as allegedly being directed to nonstatutory subject matter. Applicants respectfully submit that the claims are directed to statutory subject matter because these claims recite an invention that is within the technological arts and that produces a useful, concrete and tangible result as required by 35 U.S.C. § 101. Specifically, for example, claim 1-5 and 10-14 are apparatus claims that recite structural features and method claims 6-9 have a claimed practical application. See MPEP 2106 which states that claims define nonstatutory processes if they consist solely of mathematical operations without some claimed practical application. Additionally, accordingly to, for example, Diamond v. Chakrabarty, 447 U.S. 303, 308-09(1980) - the expansive language of section 101 includes [a patentable subject matter] "anything under the sun that is made by man". Accordingly, Applicant respectfully requests reconsideration and withdrawal of this rejection".

The Examiner disagrees and asserts that nowhere in claims 1-5 and 10-14 recite an apparatus and an encoder can be an abstract mathematical matrix G. A mathematical matrix is an abstraction and is not man made. All the limitations in claims 1-14 can be carried out by hand as a mathematical abstraction and there is no limitation in the claims that ties the mathematical abstraction of claims 1-14 to any useful manmade hardware. If it is the Applicant's contention that the algorithm could be useful in if used in a hardware environment, adding two to two could also be useful in if used in a hardware environment, but adding two to two is non-statutory and would only become statutory, if recited in connection with hardware to produce some utility for the hardware.

Applicant's arguments with respect to Prior Art rejections of claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-14 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-14 recite purely abstract algorithmic steps that can be carried out by hand or in computer software. Computer programs are non-statutory. Abstract algorithms are non-statutory.

The Applicant contends, "Claims 1-14 were rejected under 35 U.S.C. § 101 as allegedly being directed to nonstatutory subject matter. Applicants respectfully submit that the claims are directed to statutory subject matter because these claims recite an invention that is within the technological arts and that produces a useful, concrete and tangible result as required by 35 U.S.C. § 101. Specifically, for example, claim 1-5 and 10-14 are apparatus claims that recite structural features and method claims 6-9 have a claimed practical application. See MPEP 2106 which states that claims define nonstatutory processes if they consist solely of mathematical operations without some claimed practical application. Additionally, according to, for example, *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09(1980) - the expansive language of section 101 includes [a patentable subject matter] "anything under the sun that is made by man". Accordingly, Applicant respectfully requests reconsideration and withdrawal of this rejection".

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1, 2, 4-6, 8, 10, 11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tong; Wen et al. (US 6744744 B1, hereafter referred to as Tong in view of Wang; Charles C. (US 6014411 A).

35 U.S.C. 103(a) rejection of claims 1, 6 and 10.

Tong teaches a turbo code encoder (Figure 5 in Tong teaches a turbo code encoder) comprising: a first convolutional encoder for receiving bits to be encoded (Encoder 1 in Figure 5 of Tong is a first convolutional encoder for receiving bits to be encoded), generating a systematic bit and a first parity bit, and outputting them (Encoder 1 in Figure 5 of Tong generates a systematic bit S and a first parity bit P1 and outputs them to channel interleavers); an interleaver for receiving the bits to be encoded, in parallel

with the first convolutional encoder, and interleaving the received bits (Interleaver 91 in Figure 5 of Tong is an interleaver for receiving the bits to be encoded, in parallel with the first convolutional Encoder 1 in Figure 5, and interleaving the received bits); a second convolutional encoder for receiving the interleaved bits from the interleaver and generating a second parity bit (Encoder 2 in Figure 5 of Tong is a second convolutional encoder for receiving the interleaved bits from Interleaver 91 and generating a second parity bit P2); and a repeater for repeatedly outputting predefined bits among the bits output from the first and second convolution encoders (Repetition Encoder 96 in Figure 5 of Tong is a repeater for repeatedly outputting predefined bits among the bits output from the first and second convolution Encoders 1 and 2 in Figure 5).

Note: col. 10, lines 55-59 in Tong teach that puncturing is applied only as required, that is, Puncturer 95 in Figure 5 of Tong is entirely adaptive. Since the Puncturer 95 in Figure 5 is entirely adaptive it is capable of operating with no puncturing as a device for passing parity bits to selector 97 without modification, hence the circuit in Figure 5 is inherently capable of passing all of the 3N bits to Selector 97 without modification (see See, e.g., In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971)). Furthermore, col. 5, lines 59-64 in Tong teach that Figure 5 is designed to reduce complexity of rate matching circuitry for implementing the rate-matching algorithm of Figure 2 by strategic placement of rate matching circuitry such as Puncturer 95 and repetition encoder 96. Figure 2 in Tong explicitly teaches that when $y < 0$, no puncturing is applied.

However Tong does not explicitly teach the specific use of the ratio of systematic bits to parity bits is at least one systematic bit to every one parity bit.

Wang, in an analogous art, teaches use of the ratio of systematic bits to parity bits is at least one systematic bit to every one parity bit (the Abstract and col. 17, lines 5-15 of Wang teach a means for reducing coding gain without puncturing by repeating only systematic bits).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tong with the teachings of Wang by including use of the ratio of systematic bits to parity bits is at least one systematic bit to every one parity bit.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of the ratio of systematic bits to parity bits is at least one systematic bit to every one parity bit would have provided a means for reducing coding gain (col. 17, lines 5-15 of Wang).

35 U.S.C. 103(a) rejection of claims 2, 4, 5, 8, 11, 13 and 14.

Col. 10, lines 44-51 and Figure 5 in Tong teach that the Repetition Encoder 96 in Figure 5 can selectively repeat systematic bits and/or parity bits.

5. Claims 3, 7, 9 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Tong; Wen et al. (US 6744744 B1, hereafter referred to as Tong) and Wang; Charles C. (US 6014411 A).

35 U.S.C. 103(a) rejection of claims 3, 7, 9 and 12.

Tong and Wang substantially teaches the claimed invention described in claims 1, 2, 4-6, 8, 10 and 11 (as rejected above).

However Tong and Wang does not explicitly teach the specific use of particular puncturing or repetition patterns.

The Examiner asserts that Tong teaches a means for selectively puncturing or repeating turbo coded bits, which encompasses any particular embodiment of the teachings in the Tong patent for creating a particular puncturing or repetition patterns.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tong and Wang by including use of particular puncturing or repetition patterns. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of particular puncturing or repetition patterns would have provided the opportunity to ensure a properly rate matched turbo code.

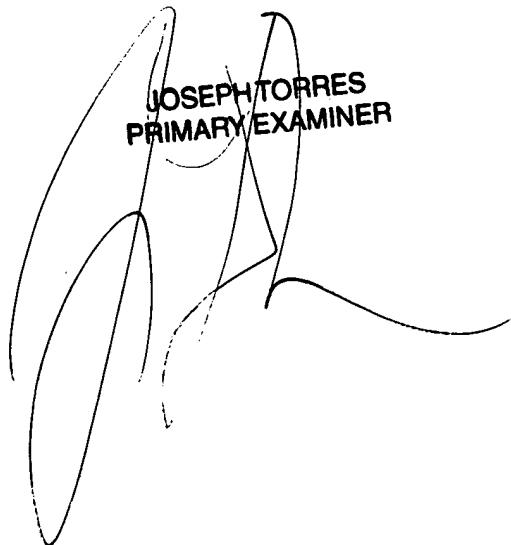
Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JOSEPH TORRES
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to be "JOSEPH TORRES". Below the signature, the text "PRIMARY EXAMINER" is written in capital letters.

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133